

CLAIMS

1. An underlayer coating forming composition used in manufacture of semiconductor devices, comprising metal nitride particles having an average particle diameter of 1 to 1000 nm, and an organic solvent.
2. An underlayer coating forming composition used in manufacture of semiconductor devices, comprising metal nitride particles having an average particle diameter of 1 to 1000 nm, an organic material, and an organic solvent.
3. The underlayer coating forming composition according to claim 1 or 2, wherein the metal nitride particles contain at least one element selected from the group consisting of titanium, silicon, tantalum, tungsten, cerium, germanium, hafnium, and gallium.
4. The underlayer coating forming composition according to claim 1 or 2, wherein the metal nitride particles are particles of at least one metal nitride selected from the group consisting of titanium nitride, titanium oxynitride, silicon nitride, silicon oxynitride, tantalum nitride, tantalum oxynitride, tungsten nitride, tungsten oxynitride, cerium nitride, cerium oxynitride, germanium nitride, germanium oxynitride, hafnium nitride, hafnium oxynitride, cesium nitride, cesium oxynitride, gallium nitride and gallium oxynitride.
5. The underlayer coating forming composition according to claim 2, wherein the organic material is at least one component selected from the group consisting of polymers, crosslinking compounds and light absorbing compounds.
6. A method for forming underlayer coating for use in manufacture of semiconductor device, comprising coating the underlayer coating forming composition according to any one of claims 1 to 5 on a semiconductor substrate, and baking it.
7. The method for forming underlayer coating according to claim 6, wherein the baking is carried out under a condition of a baking temperature of 80 to 300°C and a baking time of 0.5 to 10 minutes.

8. An underlayer coating for use in manufacture of semiconductor device, formed by coating the underlayer coating forming composition according to any one of claims 1 to 5 on a semiconductor substrate, and baking it under a condition of a baking temperature of 80 to 300°C and a baking time of 0.5 to 10 minutes.
9. A method for forming photoresist pattern for use in manufacture of semiconductor device, comprising coating the underlayer coating forming composition according to any one of claims 1 to 5 on a semiconductor substrate, and baking it to form an underlayer coating, forming a photoresist layer on the underlayer coating, exposing the semiconductor substrate covered with the underlayer coating and the photoresist layer to light, and developing the photoresist layer after the exposure to light.
10. The method for forming photoresist pattern according to claim 9, in which the exposure to light is carried out with a light of a wavelength of 248 nm, 193 nm or 157 nm.